Title: How is health literacy addressed in primary care? Strategies that general practitioners use to support patients

Running title: Health literacy in general practice

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Abstract

Background: Low health literacy is associated with adverse health outcomes and raised healthcare costs. General practitioners (GPs) are the first point of access to health care services and play a key role in building patients' health literacy. This study aimed to explore: 1) GPs' understandings of health literacy, 2) the perceived challenges to addressing health literacy, and 3) the strategies used to support people with health literacy difficulties.

Method: A qualitative study in South Western Sydney, New South Wales, Australia. Semi-structured qualitative interviews were audio-recorded and transcribed verbatim. Interview data was analyzed using the Framework method, a matrix-based approach to thematic analysis.

Results: Eighteen participants took part in the study. Four key themes were identified: 1) identifying patients with health literacy difficulties; 2) perceived consequences of low health literacy; 3) being sensitive to developing health literacy skills and; 4) strategies used to build health literacy. Intuitive skills were used to identify patient's health literacy skills through recurring encounters with patients over time. A range of communication techniques were used to build health literacy. The value of a long-term relationship with patients, and support from relatives, seem to be important in helping patients to build their health literacy skills.

Conclusions: A number of barriers may hinder building patient health literacy in general practice. An increased focus on the significance of health literacy, educationally and clinically across the entire health system can be a solution to overcome these barriers.

Keywords: general practice; health literacy; health communication; health knowledge; communication barriers; health education; patient education; qualitative

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Introduction

The impact of low health literacy on health is globally recognized [1]. Health literacy encompasses both capabilities of individuals to meet the complex demands of information for health in society, and health systems capacity in accommodating and improving health literacy [1, 2]. Broadly, the concept of health literacy has been conceptualized as 'cognitive and social skills to gain access to, understand, and use information to promote and maintain good health' [1].

Health literacy is considered a social determinant of health, with socially disadvantaged populations at greater risk [3]. Low health literacy is associated with higher levels of illness and more difficulties in managing chronic conditions, and thus is important in addressing health inequalities and in optimizing public health service expenditures [4]. A significant proportion of the world's population are considered to have low health literacy. Results of the European Health Literacy survey found that 47.6% were identified as having problematic health literacy [5]. Similarly, 59% of the Australian population are described as not having adequate health literacy skills to effectively access health services and manage health [6]. Australian men living in rural and remote communities are more likely to have lower health literacy yet experience greater difficulties accessing health services and have poorer health outcomes and higher rates of mortality [7].

The Australian health system is organized as a primary care led system similar to many European countries such as the UK and Denmark, where general practitioners (GPs) play a gatekeeping role as the first point of call for most people when seeking health services. In Australia, general practice (also known as family medicine in some countries) is a medical speciality achieved by admission to Fellowship of the Royal Australian College of General Practitioners. A GP (also known as a primary care physician or family doctor) plays a key role in coordinating patient care and providing

advice and education on health care. Their work spans prevention and health promotion, and are well placed to influence chronic disease prevention and management outcomes through the delivery of lifestyle modification interventions [8]. GP registrars (also known as GPs in training or trainee specialists) are medical doctors enrolled in a speciality 'general practice' training program. As part of this program, registrars are supervised by senior General Practitioners. This training is required in order to obtain Fellowship to the College, and enables a doctor to practice independently and supervised in general practice. The number of female GPs has increased in recent years, with women accounting for just over 50% of Fellowship members [9]. However, rural and remote areas face a shortage of doctors and struggle to recruit medical students [10].

In Australia, a high proportion of the population (86%) attend at least one GP consultation annually [11]. However, men and those living in rural and remote communities are less likely to use health services and attend regular health check-ups [12]. As such these groups may miss out on important preventive health care opportunities and health education and support. Being able to detect low health literacy is important in general practice so that communication can be tailored to meet patients' health literacy level. Effective and clear communication is integral to building health literacy and improving health outcomes [13, 14]. There is little research exploring GPs' awareness of health literacy, and the techniques they use to communicate and support patients with low health literacy

Previous work suggests that health care professionals are generally not familiar with the term health literacy and their understanding of the concept tends to focus more on patient's individual functional skills in reading and understanding than on higher level cognitive and social skills that enable people to think critically about information to make informed decisions [15, 16, 17]. Health

literacy is perceived by health professionals to be a social determinant of health that can be difficult to identify and improve because of cultural, organizational, and political barriers encountered [15, 18, 19]. Smith et al. (2013; 2014) found that oncology health professionals use a variety of cues to assess a person's health literacy skills. Cues ranged from analyzing the language and vocabulary that people used, examining non-verbal behavior (body language, facial expressions), and considering a person's socioeconomic situation. Further, oncologists reported using a number of strategies to support low health literacy, such as using plain language with minimal technical words, using analogies and visual tools (photos), and asking relatives with higher literacy to attend consultations [20, 21]. Of the few studies that have examined GPs knowledge of health literacy, the findings are mixed. Fransen et al. (2015) found that GPs appear to have a limited understanding of what health literacy is and how it can influence health outcomes [17]. By contrast, work by Joshi et al. (2014) indicates that GPs are able to recognize to patients with health literacy difficulties and were more likely to provide them with advice and support to manage their lifestyle compared to patient with higher health literacy [22].

The current study aimed to build on previous work and shed light on what GPs know about health literacy by exploring: 1) GPs understandings of health literacy, 2) the perceived challenges to addressing health literacy difficulties in practice, and 3) the strategies used to support people with low health literacy. A greater understanding of the health literacy challenges in general practice will help to inform the development of interventions designed to support communication with low health literacy populations.

Materials and methods

Theoretical approach

Since understandings of health literacy in general practice is a relatively new area of inquiry, a qualitative approach using semi-structured interviews was used. Hermeneutic phenomenology was used to guide the study because it provides a way of understanding how people interpret their own lives (lived experience), and construct meaning from their experiences. This study considered doctors' experiences of supporting and communicating to different health literacy groups, and how their experiences influenced their clinical practice. [23].

Recruitment and data collection

This study formed part of a larger study pilot testing the acceptability of a low literacy decision aid designed to support informed decision-making about prenatal screening for chromosome conditions such as Down syndrome among pregnant women.. Access to clear and balanced decision support information in early pregnancy is important, particularly in light of technological advances in prenatal genetic testing such as non-invasive prenatal testing (NIPT) [24] The decision aid contained evidence-based risk information and a values clarification exercise to help expectant couples to compare and contrast the accuracy of different types of screening tests in detecting Down syndrome. GPs are well positioned to provide information and support to prospective parents about prenatal screening as they are often the first health care professional consulted in the early stages of pregnancy where screening decisions are made.

Participants were invited to take part in a semi-structured interview to provide feedback on the decision aid and explore their understandings of health literacy. Invitation letters were sent to 320 GPs working in antenatal shared care listed on a hospital database in South Western Sydney, New South Wales, Australia. South Western Sydney is metropolitan region of Sydney, with a higher proportion of culturally and linguistically diverse and socioeconomic disadvantaged populations compared to other parts of Sydney [25]. In Australia, antenatal shared care is an arrangement between a hospital (or other birth setting) and a GP where pregnancy care is shared.. Medical doctors who offer shared care must have extra training and qualifications and a special arrangement with the birthing hospital. Interested respondents returned an expression of interest form and were contacted by the researchers to explain the study and obtain informed consent. For participation, participants received continuing professional development points from the Royal Australian College of General Practitioners.

The interviews were performed by three researchers (AC, SS, and TY) between May 2014 and December 2015 using a topic guide designed to explore understanding of health literacy and experiences of interacting with people presenting with low health literacy (see supplementary material). Depending on participants' preferences the interviews were conducted either by telephone or a face-to-face meeting in the respective clinics. All interviews were audio-recorded and transcribed verbatim with permission of all participants, and lasted between 20-30 minutes.

Analysis

The analysis was carried out by LL, supported by SS and GR, using Framework approach, a thematic analysis method involving five stages which deductively uses prior questions drawn from the aims of the study and inductively identifies themes arising from the data [26, 27]. The five

stages of Framework are: *1) familiarization with data;* a selection of 5 identified transcripts were independently read and themes identified, *2) developing a coding framework;* a framework of themes and subthemes was created to code the data and further refined, *3) indexing;* all transcripts were coded using the framework, *4) charting;*, the data were synthesized within a set of thematic matrix charts, where each participant was assigned a row and each subtheme a column, and *5) mapping;* similarities and differences of participants' experiences were identified and discussed. We also explored whether there were differences in experiences in terms of doctors' age, gender, ethnicity, language and years of clinical experience.

Results

A total of 22 respondents returned an expression of interest form. Of those, 3 were not eligible to take part, and 18 were eligible and consented to participate. Table 1 displays the participant characteristics. The mean age was 45 years (range 28-66 years). Thirteen of the 18 participants were female, 9 described themselves as Anglo-Australians, 11 spoke English as their primary language and 7 spoke another language at home. Participants had wide ranging experience – 4 of the 18 doctors had been working in general practice for less than 5 years, 6 for 11-20 years, and 6 for over 21 years. Most worked full time (n=13), 4 were registrars, 7 were contractors, and 3 were salaried.

----------Insert Table 1 about here----------

The following key themes were identified and presented below with illustrative quotes: 1) identifying patients with health literacy difficulties; 2) perceived consequences of low health literacy; 3) being sensitive to developing health literacy skills; 4) strategies and techniques used to

build health literacy. Overall, there was broad similarity in participants' accounts, regardless of their gender, age, ethnicity and primary language spoken. However, there did seem to be differences in terms of number of years they had been practicing, and their current role (e.g. registrar, partner in a medical practice). Where present, these differences are highlighted below.

1. Identifying patients with health literacy difficulties

1.1 Perceived meaning of health literacy in general practice

Nearly all participants had come across the term of health literacy before. It was mainly referred to as patients' understanding of health and medical information, medical procedures, and the ability to make healthy choices. Some participants acknowledged that patients might be health literate in one area of their health but not others. Participants with more years of clinical experience seemed to have a broader understanding of health literacy, and offer a more detailed description of the concept compared to those with less clinical experience (e.g. registrars). Further, those who had been practicing as a GP for a shorter amount of time appeared to focus more on the functional element of health literacy, as opposed to more interactive and critical aspects of the concept.

> At the most basic level, people read and understand health information, but at a much more complex level, can people make sense of concepts – medical related – medical uncertainty for example…are patients able to cope with the idea of things that are not black and white and are shades of grey you know…that there are levels of literacy' (GP6, male, 42 years, 14 years GP experience).

> "Their [patients'] personal understanding of health…. their own conditions or the things they are going through" (GP 1A, male, 31 years, 6 weeks GP experience)

> ‘A patients’ understanding of…medical terminology, medical procedures, aspects of their health care…and how…well-read they are about those matters” (GP 3, female, 32 years, 3 years GP experience)

1.2 Using professional and personal intuition to identify health literacy levels

None of the participants mentioned using formal guidelines to measure and detect patients’ levels of health literacy. However, several participants described how they subjectively assessed health literacy by considering demographic characteristics such as age, education, occupation, economic status and level of English language skills. Those living with lifestyle conditions such as diabetes and obesity were perceived as more likely to have limited health literacy. Verbal cues were also used such as; analyzing questions asked by patients; considering the language used; assessing a patient’s ability to comprehend health concepts and how they manage to convert it in relation to personal situations. GP’s reported that people with limited health literacy asked fewer questions and were hesitant in doing so. Body language and the way patients presented in the clinic. For example, having a withdrawn and insecure appearance were also mentioned as an indicator of patient understanding.

> “Usually by their presentation…not really well informed …they’ve got lifestyle issues, might be very overweight,…and then…they’ve got lots of lifestyle conditions – that they’ve somehow developed” (GP 1C, female, 49 years, 20 years GP experience).

1.3 Perceived challenges and hidden barriers used to disguise health literacy

Limited time and single consultations were reported as barriers to identifying health literacy skills. Recurring encounters with patients over time were considered important for gauging patients' health literacy abilities and affording patients and GPs the opportunity to be more open with each other. Some patients were perceived by participants to cover up their difficulties due to embarrassment of low skills or noncompliance to treatment, which could also cause barriers to the identification of health literacy.

> "But yeah some wouldn't read it and look some can't read. I've got a couple of patients who simply can't read, they always tell me they haven't brought their glasses but I know they can't read so we have to read it out to them"
> (GP14, female, 55 years, 28 years GP experience).

Most participants estimated their group of patients to have high health literacy, as they believe to practice in areas where the larger proportion of people are well educated and economically favored. Well- educated people were perceived to be more proactive in seeking personal health related information prior to seeking medical assistance. Estimates of low health literacy proportions ranged from 5-50%.

2. Perceived consequences of low health literacy

2.1 Comprehension and information-seeking

Participants felt that patients with health literacy difficulties were more likely to hold misconceptions about disease risk factors, causality, and treatment. It was mentioned that alarming symptoms might be ignored by the patients and cause severe conditions. The opposite scenario

where patients may become overly concerned about the severity of their symptoms were also of concern to some participants, as some patients were perceived as being unable to identify personally relevant and reliable information.

> "They may have really overstated what they've got you know…because it's a rare thing that they found when they put their symptoms in… it's just them actually being concerned looking up and then having a focus that may not be quite right" (GP11, female, 53 years of age, 29 years GP experience).

2.2 Self-care activities

It was a common belief that patients with lower health literacy were more likely to develop chronic lifestyle conditions such as obesity and diabetes. Some ascribed this to lower motivation and inability to live a healthy lifestyle. Activity and engagement in disease prevention and health promotion were felt to be low. Lower financial resources amongst people with limited health literacy, were also mentioned as a reason to refrain from accepting self-funded specialist care.

> "They're so resistant to seeing a specialist mainly because (specialists are) expensive I think it's like a five minute two-hundred-dollar thing…we end up, trying to convince them that it's important, so in the meantime, we order tests and start off the investigation that a specialist should initiate" (GP1B, female, 28 years, less than 1 year GP experience).

Inappropriate use of healthcare and missed appointments because of patients' difficulties in navigating between the different options due to the complexity of the system, were mentioned as a concern..

> "... People don't know quite how to negotiate the healthcare system...it's quite a complex system, so people who understand it better get better care often" (GP6, male, 42 years, 14 years GP experience).

3. Being sensitive to enhancing health literacy

3.1 Role and position of the GP

Some of the participants described their own abilities as essential to building patient health literacy. Different views of the GP role and pertaining responsibility in patient education were represented. One GP described it as the most important part of the job to educate patients, motivate interest and tailor information to ensure clear understanding, acceptance and adherence in contrast to a different perspective where mobilization of interest in listening and learning were perceived as the patient's own responsibility.

> "One of my fundamental jobs, as a GP is to…help people increase their health literacy…you know in a very broad sense…" (GP6, male, 42 years, 14 years GP experience).

Long-term clinical relationships to patients were described as an asset in developing a relationship of trust. Some perceived themselves and patients were more at ease in consultations, in turn, this led to more open communication and patients expressing their needs, concerns and knowledge. Most

perceived that detecting and building patient health literacy is something that is best done over time and difficult to do in a single consultation as follow-up on a treatment plan or repeated information may need to be communicated repeatedly.

> "And the other thing it might come back down… my experience with them in previous consults over different issues; you know things that have either been followed up or not been followed up from previous consultations, yeah but not sort of understood the significance of one thing or not understood the significance of doing a test or taking a medication"
> (GP18, female, 34 years, 7 years GP experience).

A few also mentioned the potential disadvantages of a long-term relationship. It was perceived that the relationship could become too friendly and form a barrier to discuss delicate, personal matters and this might be a reason to leave out important questions.

3.2 Role of the health care system

Some participants felt it was important that the healthcare system is sensitive in supporting health literacy issues. The mismatch between short consultation times and the large amount of information that often needs to be delivered was appointed. Re-organization of the health system to increase accessibility was seen as crucial, and the potential key role of GPs in this was highlighted.

> "The barriers are always the same and they're time. It's always a matter of like whether you've have enough time to go through the booklet (but also) fill in

> yellow card, get their bloods out of them, do their pap smear, tell them to stop taking the drugs, stop smoking….'
>
> (GP14, female, 55 years, 28 years GP experience).

3.3 Acknowledging the patient's broader life context and circumstances

Many acknowledged the importance of patients' broader life context in building health literacy. Language barriers (i.e. where the consultation could not be conducted in the patient's preferred language) were seen as a challenge when trying to understand patients, and in ensuring that medical advice was comprehensible. The organization of the health system was perceived as a barrier to building patient health literacy, particularly due to the limited time that they had with patients.

Social challenges and economic deprivation were described as critical impediments to building health literacy. People with chaotic life conditions were believed to struggle with problems, which made it difficult to be attentive about their health, to make wise decisions, and the motivation to act to improve their health because of competing priorities in their lives.

> "Well then you've got to tailor it to that particular patient…what is it in their mind set that makes them so… and usually there's social issues…there are other issues…"
>
> (GP1C, female, 42 years, 20 years GP experience).

Cultural differences were also perceived to have an impact. Different lifestyles and cultural beliefs were mentioned as a challenge to overcome when practicing within a healthcare system relying on traditional western values. Western standard treatments were described as conflicting with other

cultural medical traditions. Together, these factors were thought to influence health literacy. Some participants also described the fact that patients of indigenous origin, in this case Australian aboriginals, were more likely to miss appointments. In their experience these particular groups of patients were believed to have more difficulties in adjusting to and complying with the organization of the health care system.

> This week we've booked in stacks of aboriginal kids to have their health assessments done and they just don't turn up, that's the kind of – they value things slightly differently or different priorities. I guess actually engagement, being on time a lot of patients they don't stick to that enforced- the way we work in general practice with appointments it's much harder for them. And again it's time, making sure that you've got enough time to sit down and go through things and educate patients, that's always the biggest pressure is time. (GP 14, female, 55 years, 28 years GP experience)

4. Strategies and techniques used to build health literacy

Quotes to illustrate the findings of theme four are presented in Table 2.

4.1 Individual GP communication strategies

Participants reported using a range of visual techniques (drawings, graphics, diagrams and numbers to illustrate risk assessment, anatomy models, charts, pictures and posters), in combination to verbal communication, to communicate to patients perceived to have health literacy difficulties. Other strategies included: use of lay wording, simple, precise and patient-centered messages, slowly

‘straight forward’ talking, and rephrasing and repeating information if needed. Asking direct questions to identify patient knowledge at the beginning of a consultation to tailor information appropriately were also used.

Some emphasized the importance of taking time to explain information to ensure understanding and not overload patients in one consultation. Getting patients to describe what they had been told in their own words (teach-back method) was also used [28]. Participants described being very specific and explicit in demonstrating the realities to the patients about serious conditions in attempt to make them realize the gravity of their situation, was described as a way to bring about patient motivation and encourage them to take action and responsibility for their own health.

----------Insert Table 2 about here----------

4.2 Availability of tools and resources

Written information such as leaflets were described as essential to support the amount of information presented. Leaflets were seen as a tool to hand-out as a reminder and with the purpose of patients discussing decision-making or information in general with relatives. Also it was helpful to have written material hand-outs in different languages to fit the needs of the local community.

Some found it useful to suggest patients to be accompanied by relatives to consultations, to provide support in decision-making and to assist in memorizing and grasping essential elements of the information.

Interpreters were used in cases where translation support by family-members or relatives was not feasible. The importance of maintaining some degree of discretion towards patients was recognized and described difficult to comply with in situations where family members got involved in the interpreting role.

Medical reports, internal online chatting system and lunch-hour meetings were identified as ways to flag patients with special health literacy needs. Working conditions within the field of general practice were also described as a difficult arena to facilitate professional discussions with team members as no dedicated time was allocated to discuss these issues. Nurses were viewed as playing a key role in supporting patients to comply with treatment schedules. GP registrars (GPs in training), were more likely to ask for support from their senior supervisor if it was perceived that the patients did not fully understand.

> "I definitely flag everyone with my supervisor, who I think is…is at danger of not receiving…good care, and who's refusing like…who's refusing like advice from us, but like who's not compliant or not adherent or whatever you call it, and is unable to self-manage…you know, and is putting their own health at danger, like, I definitely contact my supervisor and make her aware of those." (GP1B, female, 28 years, less than 1 year GP experience)

Discussion

This study provides insight into the issues faced by general practitioners when supporting patients with health literacy difficulties. The findings indicate that assessments about patient's individual health literacy skills are based on intuitive judgements throughout recurring encounters with patients over time. Various verbal cues were used to assess health literacy, in combination with, body language and how well patients adhere to agreed treatment course.

Participants displayed knowledge of the health literacy concept. It was mainly defined with reference to functional (basic literacy and numeracy) health literacy, but there was acknowledgement of other more complex aspects of health literacy such as skills to discuss and evaluate (communicative / interactive health literacy), to take control over adverse situations to take action to achieve health (critical health literacy), and capacity to draw on the skills of friends and family in their social network (distributed health literacy) [29] . These findings are in line with previous work suggesting that GPs have limited knowledge of health literacy beyond the functional elements of the concept, namely interactive and critical health literacy [17].

Healthcare professionals' ability to identify patients health literacy difficulties has been discussed in the literature and it has been identified that they might overlook health literacy, overestimating patients' health literacy skills and incorrectly assuming that information and instructions have been understood [30]. This concern is also considered by participants in this study. It is notable that all the participants gave relatively low suggested estimations of the proportion of patients with health literacy difficulties compared to the official National Australian estimations of 59%. This might indicate that doctors underestimate the problem and overestimate patients' health literacy. Another explanation could be that the participants in this case, happen to practice in areas where the problems are less common, resulting in limited health literacy experience.. Another possible reason

is because health literacy training is rarely included as part of medical education curriculum and medical students do not feel confident in their tailoring their communication to patients with low health literacy [31]. Concerns about upsetting and embarrassing patients, risking a damaged doctor-patient relationship, were raised by participants as a reason to refrain from performing health literacy screening, which has also been identified in previous studies [32].

The importance of longitudinal relationships was a key finding [33]. This suggests that GPs, and other practice staff with longitudinal patient relationships, can have an important role in identifying and supporting patients with low health literacy. Communication strategies to support limited health literacy are compatible with existing guidelines [34]. It is relevant to address the barriers found in this study that can hinder the use of appropriate communication strategies. The organization of the healthcare system was identified as an obstacle to building health literacy [35]. Dissatisfaction about the limited amount of time available to each patient and the lack of transparency of the health system were identified as obstacles to patients in navigating the system.

Our study also found that the GP's recognized the influence of patients' social situation and broader life context to health literacy sensitivity, justifying the holistic bio-psycho-social approach to health care [36]. The importance of patients' social skills and situation in building health literacy supports Nutbeam's theoretical arguments [1]. Whilst some social factors (such as education level) might form a barrier to building health literacy, others might act as resources in the form of distributed health literacy, such as support from relatives and local network. Distributed health literacy in terms of social support and other network resources in a patients' local community can play an important role [29].

The findings of this study identify that GPs experiences with limited health literacy are multifactorial and interdependent, underlining the complexity of the concept. Attempts to improve the care for these patients call for deeper understanding of mechanism and interventions in various levels.

As doctors' ability to identify low health literacy may be limited, an approach mentioned in this study and described theoretically by Dewalt et al. As "universal precautions´ could compensate for this potential short coming by assuming that all patients have limited understanding of healthcare issues and modify communication accordingly [37]. Developing or implementing appropriate and easily used tools to measure health literacy is also still a possibility even though previous research has indicated that formal screening tools are not commonly used or appraised in clinical practice [37].

The current findings showed that participants with more clinical experience seemed to have a more sophisticated understanding of health literacy, and more confidence in supporting patients with low health literacy compared to those with less clinical experience and GPs in training. This is perhaps not surprising given that skills, knowledge and confidence in communicating to patients are likely to build over time with more clinical experience. Nevertheless, it does reinforce the importance of integrating health literacy for medical students and other health care professionals into degree programs to raise awareness of the concept of health literacy and help prepare health care professionals for communicating to patients with different health literacy skills [38]. Promising results have been found using such initiatives [39, 40].

Overarching changes to healthcare including increased policy focus across the entire system, making referral-pathways more smooth and transparent and optimizing clinical- and interdisciplinary teamwork across specialties would favor all but especially less health literacy people and might also leave more time for authentic contact between the patient and the GP.

Some limitations are noted. Similar to previous work in general practice, there was a very low response rate from GPs generating problems of non-response bias (the bias that results when respondents differ from non-respondents) [41]. It is possible that those who responded and consented to participate in the study have a stronger interest in health literacy and greater awareness of the concept, compared to those who did not respond. There was also an under-representation of male participants and GPs practicing in rural and remote communities. This is perhaps not surprising given there has been a rise in the number of women enrolled with the Royal Australian College of General Practitioners, and there is a shortage of GPs working in rural and remote parts of Australia [42]. Although this may limit the transferability of the findings other parts of Australia and other countries, the participants who took part had wide ranging years of clinical experience and their experiences may resonate and be of interest to general practice internationally. The data is self-report and we do not know how participants *actually* tailored their communication to patients during consultations. Future work could video or audio-record consultations to complement the current data and shed light on how patients with low health literacy are supported.

Conclusion

This study adds knowledge to the understanding of GPs experiences with health literacy in general practice. Knowledge and skills to support patients with health literacy difficulties were identified, though ability to identify patients' health literacy skills remains questionable. Other barriers to enhancing health literacy were identified pertaining to organizational challenges in the healthcare system along with social, cultural and linguistic factors. Attempts to improve the care for these patients call for deeper understanding of mechanism e.g. Patients' broader life context. Raised awareness and increased educational focus across the entire system on the concept of health literacy could serve as a future solution to the addressed challenges.

Competing interests

The authors do not have any conflicts of interest to declare.

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References

1. Nutbeam D. Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century. Health Promotion International. 2000 15(3):259-267.
2. Sorensen K, Van den Broucke S, Fullam J, et al. Health literacy and public health: a systematic review and integration of definitions and models. BMC Public Health. 2012;12:80. doi: 10.1186/1471-2458-12-80. PubMed PMID: 22276600; PubMed Central PMCID: PMCPMC3292515.
3. Rowlands G, Shaw A, Jaswal S, et al. Health literacy and the social determinants of health: a qualitative model from adult learners. Health Promot Int. 2017 Feb 1;32(1):130-138. doi: 10.1093/heapro/dav093. PubMed PMID: 28180257.
4. Berkman ND, Sheridan SL, Donahue KE, et al. Health literacy interventions and outcomes: An updated systematic review. Evidence Report/Technology Assessment. Rockville, MD: Agency for Healthcare Research and Quality.; 2011.
5. Sorensen K, Pelikan JM, Rothlin F, et al. Health literacy in Europe: comparative results of the European health literacy survey (HLS-EU). Eur J Public Health. 2015 Dec;25(6):1053-8. doi: 10.1093/eurpub/ckv043. PubMed PMID: 25843827; PubMed Central PMCID: PMCPMC4668324.
6. Australia's health. Canberra2012.
7. 2010 AIoHaW. A snapshot of men's health in regional and remote Australia. Rural health series no. 11. Cat. no. PHE 120. . Canberra: AIHW; 2010.
8. Parker SM, Stocks N, Nutbeam D, et al. Preventing chronic disease in patients with low health literacy using eHealth and teamwork in primary healthcare: protocol for a cluster randomised controlled trial. BMJ Open. 2018 06/04

03/28/received

04/20/revised

05/11/accepted;8(6):e023239. doi: 10.1136/bmjopen-2018-023239. PubMed PMID: PMC5988137.

9. Royal Australian College of General Practitioners. Female doctors choose general practice and the RACGP 2017 [cited 2017 24 July]. Available from: https://www.racgp.org.au/yourracgp/news/media-releases/female-doctors-choose-general-practice-and-the-racgp/ (Accessed 11 August 2018)
10. Royal Australian College of General Practitioners. Two small towns have found innovative ways to fight back against rural GP shortages with teamwork and community support. Good Practice. 2017.
11. ABS. Australian Health Survey : first results 2011-2012. Canberra Australian Bureau of Statistics 2012.
12. Schlichthorst M, Sanci LA, Pirkis J, et al. Why do men go to the doctor? Socio-demographic and lifestyle factors associated with healthcare utilisation among a cohort of Australian men [journal article]. BMC Public Health. 2016 October 31;16(3):1028. doi: 10.1186/s12889-016-3706-5.
13. Schillinger D, Piette J, Grumbach K, et al. Closing the loop: physician communication with diabetic patients who have low health literacy. Arch Intern Med 2003 Jan 13;163(1):83-90.
14. Adams RJ, Stocks NP, Wilson DH, et al. Health literacy. A new concept for general practice? Aust Fam Physician. 2009;38.
15. Lambert M, Luke J, Downey B, et al. Health literacy: health professionals' understandings and their perceptions of barriers that Indigenous patients encounter. BMC Health Serv Res. 2014 Nov 29;14:614. doi: 10.1186/s12913-014-0614-1. PubMed PMID: 25471387; PubMed Central PMCID: PMCPMC4267746.

16. Macabasco-O'Connell AF-B, EK. . Knowledge and Perceptions of Health Literacy Among Nursing Professionals. Journal of Health Communication. 2011.

17. Fransen Mirjam P, Beune Erik J.A.J, Baim-Lance Abigail M, et al. Diabetes self-management support for patients with low health literacy: Perceptions of patients and providers. Journal of Diabetes. 2015;7(3):418-425. doi: doi:10.1111/1753-0407.12191.

18. Zanchetta M, Taher Y, Fredericks S, et al. Undergraduate nursing students integrating health literacy in clinical settings. Nurse Educ Today. 2013 Sep;33(9):1026-33. doi: 10.1016/j.nedt.2012.05.008. PubMed PMID: 22683253.

19. Dickens C, Lambert BL, Cromwell T, et al. Nurse Overestimation of Patients' Health Literacy. Journal of Health Communication. 2013 10/04;18(Suppl 1):62-69. doi: 10.1080/10810730.2013.825670. PubMed PMID: PMC3814908.

20. Smith SK, Petrak LM, Dhillon HM, et al. Are radiation oncologists aware of health literacy among people with cancer treated with radiotherapy? Eur J Cancer Care (Engl). 2014 Jan;23(1):111-20. doi: 10.1111/ecc.12111. PubMed PMID: 23957463.

21. Smith SK, Zhu Y, Dhillon HM, et al. Supporting patients with low health literacy: what role do radiation therapists play? Support Care Cancer. 2013 Nov;21(11):3051-61. doi: 10.1007/s00520-013-1875-7. PubMed PMID: 23812495.

22. Joshi C, Jayasinghe UW, Parker S, et al. Does health literacy affect patients' receipt of preventative primary care? A multilevel analysis. BMC Family Practice. 2014 10/25 08/28/received
10/06/accepted;15:171. doi: 10.1186/s12875-014-0171-z. PubMed PMID: PMC4212097.

23. Charalambous A, Papadopoulos IR, Beadsmoore A. Ricoeur's hermeneutic phenomenology: an implication for nursing research. Scand J Caring Sci. 2008 Dec;22(4):637-42. doi: 10.1111/j.1471-6712.2007.00566.x. PubMed PMID: 19000085.

24. Smith SK, Sousa MS, Essink-Bot ML, et al. Socioeconomic Differences in Informed Decisions About Down Syndrome Screening: A Systematic Review and Research Agenda. Journal of Health Communication. 2016;21(8):868-907. doi: 10.1080/10810730.2016.1177145. PubMed PMID: WOS:000382325300003.

25. South Western Sydney Local Health District. Health Profile of Local Communities. New South Wales Health, Sydney Local Health District. Accessed 4 July 2018, https://www.swslhd.health.nsw.gov.au/planning/content/pdf/SWSLHD%20Community%20Profile%20Summary%20070814.pdf; 2014.

26. Pope C, Ziebland S, Mays N. Qualitative research in health care. Analysing qualitative data. BMJ. 2000 Jan 08;320(7227):114-6. PubMed PMID: 10625273; PubMed Central PMCID: PMCPMC1117368.

27. Ritchie J, Lewis J. Qualitative Research Practice: A Guide for Social Science Students and Researchers. London, UK: Sage Publications; 2003.

28. Teach-back: North Carolina Program on Health Literacy; 2015. Available from: http://www.nchealthliteracy.org/toolkit/tool5.pdf

29. Edwards M, Wood F, Davies M, et al. 'Distributed health literacy': longitudinal qualitative analysis of the roles of health literacy mediators and social networks of people living with a long-term health condition. Health Expectations. 2015;18:1180–1193. doi: doi: 10.1111.

30. Kelly PA, Haidet P. Physician overestimation of patient literacy: a potential source of health care disparities. Patient Educ Couns. 2007 Apr;66(1):119-22. doi: 10.1016/j.pec.2006.10.007. PubMed PMID: 17140758.

31. Ali NK, Ferguson RPM, S.; Hanlon, A. . Do medical trainees feel confident communicating with low health literacy patients? . J Community Hosp Int Med Perspect 2014;14(4. doi: 10.3402/jchimp.v4.22893. eCollection 2014.).

32. Parikh NS, Parker RM, Nurss JR, et al. Shame and health literacy: the unspoken connection. Patient Educ Couns. 1996 Jan;27(1):33-9. PubMed PMID: 8788747.

33. Edwards M, Wood F, Davies M, et al. The development of health literacy in patients with a long-term health condition: the health literacy pathway model. BMC Public Health. 2012;12:130. doi: 10.1186/1471-2458-12-130. PubMed PMID: 22332990; PubMed Central PMCID: PMCPMC3305618.

34. Roett MA, Wessel L. Help your patient "get" what you just said: a health literacy guide: these simple strategies can help patients with limited health literacy grasp and retain vital information about chronic conditions, medications, and more. Journal of Family Practice. April 2012;61(4):(4):190-196.

35. Brach C, Keller D, Hernandez LM, et al. Ten Attributes of Health Literate Health Care Organizations; A discussion paper. Washington DC: Institute of Medicine; 2012.

36. Havelka M, Lucanin JD, Lucanin D. Biopsychosocial model--the integrated approach to health and disease. Coll Antropol. 2009 Mar;33(1):303-10. PubMed PMID: 19408642.

37. DeWalt DA, Broucksou KA, Hawk V, et al. Developing and testing the health literacy universal precautions toolkit. Nurs Outlook. 2011 Mar-Apr;59(2):85-94. doi: 10.1016/j.outlook.2010.12.002. PubMed PMID: 21402204; PubMed Central PMCID: PMCPMC5091930.

38. Mullan J, Burns P, Weston K, et al. Health Literacy amongst Health Professional University Students: A Study Using the Health Literacy Questionnaire. Education Sciences. 2017;7(2):54. PubMed PMID: doi:10.3390/educsci7020054.

39. Milford E, Morrison K, Teutsch C, et al. Out of the classroom and into the community: medical students consolidate learning about health literacy through collaboration with Head

Start. BMC Med Educ. 2016 Apr 23;16:121. doi: 10.1186/s12909-016-0635-z. PubMed PMID: 27107965; PubMed Central PMCID: PMCPMC4841965.

40. Kaper MS, Sixsmith J, Koot JAR, et al. Developing and pilot testing a comprehensive health literacy communication training for health professionals in three European countries. Patient Education and Counseling. 2018;101(1):152-158. doi: 10.1016/j.pec.2017.07.017.

41. Cottrell E, Roddy E, Rathod T, et al. Maximising response from GPs to questionnaire surveys: do length or incentives make a difference? BMC Medical Research Methodology. 2015;15:3. PubMed PMID: PMC4293861.

42. McGrail MR, Humphreys JS, Joyce CM. Nature of association between rural background and practice location: A comparison of general practitioners and specialists. BMC Health Services Research. 2011 03/23

12/03/received

03/23/accepted;11:63-63. doi: 10.1186/1472-6963-11-63. PubMed PMID: PMC3074548.

Table 1. GP Characteristics (n=18)[7]

Characteristics	N (%)
Age (years)	
Mean	45
Range	28-66
Gender	
Male	5 (28)
Female	13 (72)
Country of birth	
Australia	9 (50)
South-East Asia	5 (33)
Africa	3 (16)
UK	1 (6)
Primary language	
English	11 (61)
Other	7 (39)
Years of experience as a GP	
Less than a year	3 (20)
1-5 years	1 (7)
6-10 years	2 (13)
11-20 years	3 (20)
21-30 years	5 (33)
31+ years	1 (7)
Employment status	
Full-time	13 (72)
Part-time	5 (28)
Current role in general practice	
Registrar/in training[8]	4 (22)
Contractor/sessional	7 (39)
Retainer / salaried	3 (17)
Partner/ principal	4 (22)

[7] Some percentages do not add up to 100% due to rounding

[8] *GP registrars (also known as GPs in training or trainee specialists) are medical doctors enrolled in a speciality 'general practice' training program. As part of this program, registrars are supervised by senior General Practitioners. This training is required in order to obtain Fellowship to the College, and enables a doctor to practice independently and supervised in general practice.*

Table 2. Quotes to illustrate strategies used by GPs to support health literacy

Strategy	Quotation
Use of different communication strategies according to pts preferred learning styles and level of health literacy.	*"I guess you got to take into account how those people with low health literacy learn and take on information… whether they're an auditory learner or whether they're a visual learner" (GP12, female, 41 years, 9 years GP experience)*
	"Like I said, pictures are always better even with people with high literacy, but it's just you might not need the picture for someone with high literacy but if you can't get a point across you can use a picture. But pictures are always a good option" (GP15, male, 35 years, 7 years GP experience)
Adjusting language according to level of understanding – keeping it simple and precise and use of lay terms.	*"What I might need is to think really carefully about my wording with things, with this patient…and I need to explain in anything that's even vaguely medical in a more detailed way then I would otherwise do" (GP3, female, 32 years, 3 years GP experience)*
	"I'll say it again in more layman's term and make sure she is following me as i'm saying it" (GP17, female, 37 years, 4 years GP experience)
	"So, avoiding any you know any excess information, any details that weren't the most, weren't all that supportive" (GP18, female, 35 years, 7 years GP experience)
Use of teach-back method	*"One of the most common ways of doing it would be just to say what do you understand about what is going on… …and so sometimes getting them to say it in their words" (GP 1a, male, 32 years, less than a year GP experience)*
	"Firstly i'd ask them and then might actually ask them to sort of explain to me what they understood from what I said" (GP18, female, 35 years,7 years GP experience)
	"I often get patients to tell me back what I have told them to kind of gauge what their understanding" (GP9, male, 37 years, 3 years GP experience)
Use of distributed health i.e. Support from family and local community.	*"I involve number one the patient itself, and then the extended family or the family around them, then I will source a practice nurse and other sources like dietician and diabetic educator nurse" (GP7, female, 59 years, 26 years GP experience)*
	"... Tell them to go and discuss it with family members, or if there's family members around at the moment, discussing it with them, seeing what they understand and still trying to explain to them what is happening and then they go away, think about it and come back with any questions that they have" (GP19, female, 36 years, 1 year GP experience)

Supplementary material

GP interview schedule

Note: this schedule outlines the key topics that the interviewer will seek to elicit views on and illustrates the types of 'opener' questions that will be used. It is not intended as a 'script'. The order in which topics are discussed and the way in which questions are phrased will be adjusted to suit individual responses. This guide may be modified as the study proceeds to ensure that the researcher explores in later interviews issues that emerge as important in earlier ones.

Introducing the study

- **Introduce self**
- **Clearly explain study rationale**
- **Reminder participant that the interview is confidential and all data is de-identified**
- **Confirm consent to audio record**

Health literacy

This study is about how GPs support patients with different health literacy skills.

- Have you come across the term 'health literacy' before?
    - Prompt have you heard anyone using this term before?
- What do you think the term 'health literacy' means?
    - Prompt for definition of health literacy
    - What does health literacy mean in the GP context?

- In your clinic, can you estimate the proportion of low health literacy patients or patients who have health literacy difficulties?
- How can you tell if a patient is struggling to understand information what you are telling that?
- And, how can you tell if a patient understands the information you are telling them?
- Do you do anything differently in your approach with these patients who do not understand information, compared to patients who do understand?
- In general practice, can you think of how low health literacy in patients can impact on their care?
    - Prompt what are the effects of low health literacy on patient care and management
- In your experience, what do you think is the most effective way to communicate health information (e.g. Written, verbal)?
    - Prompt for low health literacy patients. Do you favor any particular way of communicating to patients?
- Some health professionals find it helpful to use visual illustrations (e.g. Simple medical diagrams) or photos to assist patient understanding. For example, in the interviews we did with radiation therapists, they talked about showing patients photos of the treatment machines.
    - Have you ever used this technique to communicate information?
- How do you communicate within GP practice team about:
    - Specific patients
    - Treatment and follow-up decisions
    - Flag issues or patients that worry you, patients in distress, patients that aren't understanding or not following treatment and follow-up care advice.

    - Do you use medical records, referral letters, etc. to communicate health literacy issues

- Now i'd like you to think about the patients you've known for a long time– would you be able tell me about how you think this longer term relationship affects how you practice (e.g. How you communicate to patients who have been seeing you as their doctor for a long time?)

- If you think a patient is struggling to understand, would you encourage him or her to bring family or friend with them to help interpret / remember?

Closing

As this is a new area of research, we may have missed something important in this interview. Is there anything that comes to mind that we haven't discussed today?

That's the end of our interview. Thank you very much for your time and help. Your answers will be kept in confidence. Please do not hesitate to call me if you have any queries or concerns on [insert phone number] or send me an email [insert email address].